



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

## NOTICE OF ALLOWANCE AND FEE(S) DUE

78849 7590 05/07/2009

LOWRIE, LANDO & ANASTASI, LLP  
E2023  
One Main Street  
Suite 1100  
Cambridge, MA 02142

EXAMINER

LEE, JAE W

ART UNIT

PAPER NUMBER

1656

DATE MAILED: 05/07/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/538,823

06/13/2005

L Julie Huber

E2023-7020US

5992

TITLE OF INVENTION: CYTOCHROME C ACETYLTATION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$755	\$300	\$0	\$1055	08/07/2009

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

#### I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

## PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** Mail Stop ISSUE FEE  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, Virginia 22313-1450**  
**or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

78849

7590

05/07/2009

LOWRIE, LANDO & ANASTASI, LLP  
 E2023  
 One Main Street  
 Suite 1100  
 Cambridge, MA 02142

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

## Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,823	06/13/2005	L Julie Huber	E2023-7020US	5992

TITLE OF INVENTION: CYTOCHROME C ACETYLATION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$755	\$300	\$0	\$1055	08/07/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
LEE, JAE W	1656	435-006000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

1 \_\_\_\_\_

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 \_\_\_\_\_

3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☐ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,823	06/13/2005	L Julie Huber	E2023-7020US	5992
78849	7590	05/07/2009	EXAMINER	
LOWRIE, LANDO & ANASTASI, LLP			LEE, JAE W	
E2023			ART UNIT	PAPER NUMBER
One Main Street			1656	
Suite 1100			DATE MAILED: 05/07/2009	
Cambridge, MA 02142				

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/538,823	HUBER ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	JAE W. LEE	1656	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 01/28/2009.
2. ☒ The allowed claim(s) is/are 1,2,4,8-11,23,27,28,31,34,35,37,38,40-45,47-54,56 and 57.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| <p>1. <input type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br/>Paper No./Mail Date ____</p> <p>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</p> | <p>5. <input type="checkbox"/> Notice of Informal Patent Application</p> <p>6. <input type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date ____.</p> <p>7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment</p> <p>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</p> <p>9. <input type="checkbox"/> Other ____.</p> |
|---|--|

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this Examiner's amendment was given in a telephone interview with Natalie A. Lissy on 04/22/2009. Claims 1, 2, 4, 8-11, 23, 27, 28, 31, 34, 35, 37, 38, 40-45, 47-54, 56 and 57 are allowed.

- Replace the abstract with the one attached hereto on a separate sheet of paper.
- A clean copy of the claims is provided below.

1. A method of evaluating a compound, the method comprising contacting a Silent Information Regulator (SIR) polypeptide having deacetylase activity with the compound in vitro, in the presence of a cytochrome c polypeptide, wherein the amino acid sequence of the SIR polypeptide comprises an amino acid sequence that is at least 95% identical to the amino acid sequence of SEQ ID NO: 1, and

evaluating if the compound modulates interaction between the SIR polypeptide and the cytochrome c polypeptide.

2. The method of claim 1, wherein the cytochrome c polypeptide is acetylated at at least one lysine.

Art Unit: 1656

3. (Canceled)

4. The method of claim 1, wherein the cytochrome c polypeptide is human cytochrome c polypeptide.

5 – 7. (Canceled)

8. The method of claim 1, wherein the SIR polypeptide comprises the amino acid sequence of SEQ ID NO: 1.

9. A method comprising:

contacting a cultured cell which expresses a SIR polypeptide having deacetylase activity and a cytochrome c polypeptide with a test compound, wherein the amino acid sequence of the SIR polypeptide comprises an amino acid sequence that is at least 95% identical to the amino acid sequence of SEQ ID NO: 1, and

determining if the test compound modulates acetylation of the cytochrome c polypeptide.

10. The method of claim 9 further comprising evaluating apoptosis or an indication of apoptosis in the cell.

11. A method of evaluating a test compound, the method comprising:

contacting a SIR polypeptide having deacetylase activity with the test compound, in the presence of a cytochrome c polypeptide, in vitro, wherein the amino acid sequence of the SIR polypeptide comprises an amino acid sequence that is at least 95% identical to the amino acid sequence of SEQ ID NO: 1,

evaluating if the test compound modulates interaction between the SIR polypeptide and the cytochrome c polypeptide;

contacting a cultured cell which expresses the SIR polypeptide and a cytochrome c polypeptide with the test compound, and

Art Unit: 1656

determining if the test compound modulates acetylation of the cytochrome c polypeptide in the cell.

12 – 22. (Canceled)

23. The method of claim 11, wherein the SIR polypeptide comprises the amino acid sequence of SEQ ID NO: 1.

24 – 26. (Canceled)

27. The method of claim 1, wherein NAD or an NAD analog is present during the contacting step.

28. The method of claim 9, wherein NAD or an NAD analog is present during the contacting step.

29 – 30. (Canceled)

31. The method of claim 11, wherein NAD or an NAD analog is present during the contacting step.

32 – 33. (Canceled)

34. The method of claim 9, wherein the SIR polypeptide comprises the amino acid sequence of SEQ ID NO: 1.

35. The method of claim 9, wherein the cytochrome c polypeptide is acetylated at at least one lysine.

Art Unit: 1656

36. (Canceled)

37. The method of claim 9, wherein the cytochrome c polypeptide is human cytochrome c polypeptide.

38. The method of claim 11, wherein the cytochrome c polypeptide is acetylated at at least one lysine.

39. (Canceled)

40. The method of claim 11, wherein the cytochrome c polypeptide is human cytochrome c polypeptide.

41. The method of claim 1, wherein the cytochrome c polypeptide is acetylated.

42. The method of claim 9, wherein the cytochrome c polypeptide is acetylated.

43. The method of claim 11, wherein the cytochrome c polypeptide is acetylated.

44. A method of evaluating a compound, the method comprising contacting a cultured cell which expresses a SIR polypeptide having deacetylase activity with the compound, in the presence of a cytochrome c polypeptide, wherein the amino acid sequence of the SIR polypeptide comprises an amino acid sequence that is at least 95% identical to the amino acid sequence of SEQ ID NO: 1, and

evaluating if the compound modulates interaction between the SIR polypeptide and the cytochrome c polypeptide.

45. The method of claim 44, wherein the cytochrome c polypeptide is acetylated at at least one lysine.



Art Unit: 1656

46. (Canceled)

47. The method of claim 44, wherein the cytochrome c polypeptide is human cytochrome c polypeptide.

48. The method of claim 44, wherein the SIR polypeptide comprises the amino acid sequence of SEQ ID NO: 1.

49. The method of claim 44, wherein NAD or an NAD analog is present during the contacting step.

50. The method of claim 44, wherein the cytochrome c polypeptide is acetylated.

51. A method comprising:

contacting a SIR polypeptide having deacetylase activity and a cytochrome c polypeptide with a test compound in vitro, wherein the amino acid sequence of the SIR polypeptide comprises an amino acid sequence that is at least 95% identical to the amino acid sequence of SEQ ID NO: 1, and

determining if the test compound modulates acetylation of the cytochrome c polypeptide.

52. The method of claim 51, wherein NAD or an NAD analog is present during the contacting step.

53. The method of claim 51, wherein the SIR polypeptide comprises the amino acid sequence SEQ ID NO: 1.

54. The method of claim 51, wherein the cytochrome c polypeptide is acetylated at at least one lysine.

55. (Canceled)

56. The method of claim 51, wherein the cytochrome c polypeptide is human cytochrome c polypeptide.

57. The method of claim 51, wherein the cytochrome c polypeptide is acetylated.

### REASONS FOR ALLOWANCE

The following is an Examiner's statement of reasons for allowance. While Verdin et al. (US Patent Application No. 10/444,633 filed on 05/23/2002, Publication No. US 2004/0091953) teach a method comprising determining the *histone deacetylase activity* of human Silent Information Regulator (SIR) 3 polypeptide, the Examiner has found no teaching or suggestion in the prior art directed to a method of evaluating a compound, the method comprising contacting a SIR1 polypeptide having deacetylase activity with the compound in vitro, or in a cultured cell, in the presence of a cytochrome c polypeptide, wherein the amino acid sequence of the SIR1 polypeptide comprises an amino acid sequence that is at least 95% identical to the amino acid sequence of SEQ ID NO: 1, and evaluating if the compound modulates interaction between the SIR polypeptide and the cytochrome c polypeptide. It is noted that the prior art does not teach or suggest that the human SIR1 polypeptide as set forth in SEQ ID NO: 1 interacts with or deacetylates the cytochrome c polypeptide. Therefore, the claimed invention is novel and unobvious over the prior art of record.

Art Unit: 1656

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jae W. Lee whose telephone number is 571-272-9949. The examiner can normally be reached between 9:00 to 5:30 on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on 571-272-0811. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JAE W LEE/  
Examiner, Art Unit 1656

/Rebecca E. Prouty/  
Primary Examiner,  
Art Unit 1652

### Abstract

Modulation of cytochrome c acetylation, e.g., with a SIR polypeptide, enables interventions that modulate lifespan regulation and cell proliferation, e.g., by modulating apoptosis and/or mitochondrial function such as respiration.